

WORKER SAFETY AND FIRE PROTECTION

Testimony of Alvin J. Greenberg, Ph.D. and Rick Tyler

SUMMARY OF CONCLUSIONS

Staff concludes that if the applicant for the proposed Orange Grove Project (OGP) provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY -1** and **-2** and fulfils the requirements of **WORKER SAFETY -3** through **-6**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards. The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant will be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

INTRODUCTION

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Staff Assessment (SA) is to assess the worker safety and fire protection measures proposed by the Orange Grove Project (OGP) and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

**Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

<u>Applicable Law</u>	<u>Description</u>
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act – OSHA of 1970)	This act mandates safety requirements in the workplace with the purpose of “[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources” (29 USC § 651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (OSHA Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California’s plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
California Fire Code	The fire code contains general provisions for fire safety, including requirements for proper storage and handling of hazardous materials and listing of the information needed by emergency response personnel. Enforced by the North County Fire Protection District.
County Fire Code – San Diego County Code of Regulatory Ordinances, Title 3, Division 5, Chapter 3	Ensures that all industrial facilities comply with rules and regulations regarding flammable materials and other fire hazards.
National Fire Protection Association (NFPA) standards	These standards provide specifications and requirements for fire safety, including the design, installation, and maintenance of fire protection equipment. Enforced by the North County Fire Protection District.

SETTING

The proposed facility would be located in rural North San Diego County, about five miles east of the City of Fallbrook and about two miles west of the community of Pala. The proposed site is not currently within the jurisdiction of a fire department; however, it is within the Sphere of Influence of the North County Fire Protection District (NCFPD). The County of San Diego has indicated that it will assign a fire protection district to provide services to the area or the applicant has indicated will enter into a private service contract directly with the NCFPD. Once the county designates a service provider or a private service contract is approved, the project would be under the jurisdiction of the local fire district for code enforcement and fire protection/emergency response services (OGE 2008a, Section 6.10.1.5.2). Emergency medical response would also be provided by the NCFPD or the Valley Center Fire Protection District which may have an exclusive operating area (EOA) franchise for a region that includes the OGP site (TRC2008f, Data Response #56 and Exhibit 54-1).

The closest NCFPD station to the OGP site would be Station #4, located at 4375 Pala Mesa Drive (approximately five miles west). Response time from this station to the site would be about nine minutes (OGE 2008a, Section 6.10.1.5.2 and NCFPD 2008). The NCFPD as a whole has six fire stations (servicing about 90-square miles).

Although the site would be under the jurisdiction of the NCFPD, the nearest station to the site would be the Pala Fire Department (PFD) station, located about two miles northeast. This station would respond to the OGP site under a mutual aid agreement with NCFPD. The PFD station is equipped with fire response personnel and is staffed with paramedics assigned by Mercy Ambulance, an emergency medical services contractor. Total response time from this station would be about three minutes (OGE 2008a, Section 6.10.1.5.2 and PFD 2008).

The NCFPD would also be the first responder to hazardous materials incidents, with full response provided by the San Diego City and County Department of Health Hazardous Materials Incident Response Team (DEH-HIRT). The DEH-HIRT is capable of handling any hazardous materials-related incident and would respond within one hour from Station No. 44, located at 10011 Black Mountain Road in San Diego, approximately 37 miles away.

**Worker Safety and Fire Protection Table 1
Fire Department Equipment and Personnel***

Fire Department/ Station	Total Response Time**	Distance to OGP	EMS/HazMat Capability***
NCFPD Station #4	9 min.	~5 mi	Y/Y
Pala Fire Department	3 min.	~2 mi	Y/Y

*Source: phone conversations with Fire Chief Metcalf (NCFPD 2008) and Fire Chief Ravago (PFD 2008).

**total response times are estimated from the moment a 911 call is made to arrival at the site and are dependent upon traffic conditions and other variables.

***all personnel are trained to at least EMT-1 level and first responder for hazardous materials incidents.

In addition to construction and operations worker safety issues, the potential exists for exposure to contaminated soil during site preparation. The Phase I Environmental Site Assessment conducted for this site in 2008 identified no "Recognized Environmental Conditions" per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage or disposal of hazardous substances on the site, nor any other environmental concern that would require remedial action (OGE 2008a, Section 6.14.1.2 and Appendix 6.14-A). To address the remote possibility that soil contamination would be encountered during construction of the OGP, proposed Conditions of Certification **WASTE-1** and **WASTE-2** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. See the staff assessment section on **WASTE MANAGEMENT** for a more detailed analysis of this topic.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

Two issues are assessed in Worker Safety-Fire Protection:

1. The potential for impacts on the safety of workers during demolition, construction, and operations activities, and
2. Fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by California Division of Occupational Safety and Health (Cal-OSHA) regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for staff's review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal-OSHA standards.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine if they feel adequately trained, manned, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on a local fire department. If it would, staff will recommend that the applicant mitigate this impact by providing increased resources to the fire department.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Worker Safety

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed OGP would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the OGP to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program will be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase "Safety and Health Program" to refer to the measures that will be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

OGP encompasses construction and operation of a natural gas fired-facility. Workers will be exposed to hazards typical of construction and operation of a gas-fired simple cycle facility.

Construction Safety Orders are published in 8 CCR sections 1502, et seq. These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Safety and Health Program will include the following:

- Construction Injury and Illness Prevention Program (8 CCR § 1509)
- Construction Fire Prevention Plan (8 CCR § 1920)
- Personal Protective Equipment Program (8 CCR §§ 1514 to 1522)
- Emergency Action Program and Plan

Additional programs outlined in the applicant's example table of contents for a Construction Health and Safety Program (OGE 2008a Appendix 6.17-A) include:

- **Program Administration:**
 - Safety and Accident Prevention,
 - New Hire Orientation,
 - Accident/Incident Investigations and Reporting,
 - Safety Task Assignment,
 - Safety Monitoring Activities,
 - Emergency Services,
 - Site Emergency Evacuation Plan,
 - Severe Weather Plan,
 - Security,
 - Subcontractor Requirements,
 - Housekeeping,
 - Hazardous Waste Management, and
 - Competent Person Designation.
- **Occupational Health:**
 - Control of Radiation Hazards, Hazard Communication Program,
 - Bloodborne Pathogens,
 - Lead Exposure Control Program,
 - Asbestos Handling Procedures,
 - Inorganic Arsenic Exposure Control Program,
 - Heat and Cold Stress, and
 - Decontamination Procedures.
- **Equipment Safety:**
 - Construction Equipment Inspections,
 - Crane Lift Procedure, and
 - Suspended Work Basket/Platform.

The Application for Certification (AFC) includes adequate outlines of each of the above programs (OGE 2008a, Appendix 6.17-A). The applicant has stated that the construction contractor would be responsible for preparing and implementing the construction health and safety program (OGE 2008a, Section 6.17.2.1). Prior to the start of construction of the OGP, detailed programs and plans will be provided to the California Energy Commission Compliance Project Manager (CPM) and to the NCFPD pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at the OGP, the Operations and Maintenance Safety and Health Program will be prepared. This operational safety program will include the following programs and plans:

- Injury and Illness Prevention Program (8 CCR § 3203),
- Fire Protection and Prevention Program (8 CCR § 3221),
- Personal Protective Equipment Program (8 CCR §§ 3401 to 3411), and
- Emergency Action Plan (8 CCR § 3220).

In addition, the requirements under General Industry Safety Orders (8 CCR §§ 3200 to 6184), Electrical Safety Orders (8 CCR §§ 2299 to 2974), and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450 to 544) will be applicable to the project. Written safety programs for the OGP, which the applicant will develop, will ensure compliance with the above-mentioned requirements. Prior to operation of OGP, all detailed programs and plans will be provided to the CPM and the NCFPD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. The major items required in both safety and health programs are as follows:

Injury and Illness Prevention Program

- identity of person(s) with authority and responsibility for implementing the program;
- safety and health policy of the plan;
- definition of work rules and safe work practices for construction activities;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- specific safety procedures; and
- training and instruction.

The applicant stated that a safety coordinator would be assigned to provide ongoing input on the effectiveness of the IIPP and recommend updates or improvements (OGE 2008a, Section 6.17.2.2.1).

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 CCR § 3221). The plan will accomplish the following actions:

- determine general program requirements;
- determine fire hazard inventory, including ignition sources and mitigation;
- develop good housekeeping practices and proper materials storage;
- establish employee alarm and/or communication system(s);
- provide portable fire extinguishers at appropriate site locations;
- locate fixed fire fighting equipment in suitable areas;
- specify fire control requirements and procedures;
- establish proper flammable and combustible liquid storage facilities;
- identify the location and use of flammable and combustible liquids;
- provide proper dispensing and determine disposal requirements for flammable liquids;
- establish and determine training and instruction requirements and programs; and
- identify personnel to contact for information on plan contents.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the NCFPD for review and comment to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require personal protective equipment and first aid supplies whenever hazards are present that due to process, environment, chemicals, or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 CCR §§ 3380 to 3400). The OGP operational environment will require personal protective equipment.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and will carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and

- when and how to replace the protective clothing and equipment.

The Personal Protective Equipment Program ensures that employers comply with the applicable requirements for the program and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 CCR § 3220). The AFC contains a satisfactory outline for an Emergency Response Plan (OGE 2008a, Appendix 6.17-B).

The plan will accomplish the following:

- establish emergency escape procedures and emergency escape route for the facility;
- determine procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the plant has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication systems for the facility;
- establish a list of personnel to contact for information on the plan contents;
- provide emergency response procedures for ammonia release; and
- determine and establish training and instruction requirements and programs.

Written Safety Program

In addition to the specific plans listed above, additional LORS called “safe work practices” apply to the project. Both the Construction and the Operations Safety Programs will address safe work practices under a variety of programs. The components of these programs include, but are not limited to, the programs found under the heading Construction Safety and Health Program earlier in this staff assessment.

Safety Training Programs

Employees will be trained in the safe work practices described in the above-referenced safety programs.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the National Institute for Occupational Safety and Health (NIOSH):

- More than 7 million persons work in the construction industry, representing 6% of the labor force. Approximately 1.5 million of these workers are self employed.

- Of approximately 600,000 construction companies, 90% employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year, totaling more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6%) between 1980 and 1993.
- Construction injuries account for 15% of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. This has been evident in the audits of power plants under construction recently conducted by the staff. The federal Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors to improve their safety and health performance; to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections; to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term "Competent Person" is used in many OSHA and Ca/-OSHA standards, documents, and directives. A "Competent Person" is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3**, which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer work sites typical of large complex industrial-type projects such as the construction of gas-fired power plants.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the audit staff include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and
- lack of adequate employee or contractor written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner yet reporting to the Chief Building Official and CPM, will serve as an extra set of eyes to ensure that safety procedures and practices are fully implemented at all power plants certified by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged the team in questions about its findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Fire Hazards

During construction and operation of the proposed OGP project, there is the potential for both small fires and major structural fires. Electrical sparks; combustion of fuel oil,

natural gas, hydraulic fluid, mineral oil, or insulating fluid at the power plant switchyard; or flammable liquids, explosions, and over-heated equipment may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires and explosions of natural gas or other flammable gasses or liquids are rare. Compliance with all LORS will be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC and spoke to representatives of the North County Fire Protection District (NCFPD) and the Pala Fire Department (PFD) to determine if available fire protection services and equipment would adequately protect workers and to determine the project's impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the NCFPD and the PFD, given that the project site is annexed to the NCFPD service area (TRC2008f, Exhibit 54-1; NCFPD 2008, and PFD 2008).

Construction

The Construction Fire Protection and Prevention plan will address the placement of fire extinguishers throughout the site during construction and will provide guidance for safety procedures and training to minimize the likelihood of fires during the construction period (OGE 2008a, Appendix 6.17-A).

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended National Fire protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. Fire suppression elements in the proposed plant will include both fixed and portable fire extinguishing systems. The fire water will be supplied from the Fallbrook Public Utility District (FPUD) by truck transport and stored in a 535,000-gallon tank of which 360,000 gallons would be reserved for fire suppression (OGE 2008a, Sections 2.6.2.2 and 2.6.2.3). The water tank would supply the plant fire loop using one electric fire pump and one diesel-driven fire pump to maintain adequate pressure (OGE 2008a, Section 2.9.3).

A fixed sprinkler system would be installed in administrative buildings in accordance with NFPA requirements. A carbon dioxide fire protection system would be provided for the combustion turbine generators and accessory equipment. This system would have fire detection sensors that will trigger alarms, turn off ventilation, close ventilation openings, and automatically actuate the CO₂ suppression system. In addition to the fixed fire protection system, the appropriate class of service portable extinguishers and hose reels would be located throughout the facility at code-approved intervals (OGE 2008a, Sections 2.9.3 and 6.17.2.4.2). These systems are standard requirement by the NFPA and the Uniform Fire Code, and staff has determined that they will ensure adequate fire protection.

The applicant would be required by Conditions of Certification **WORKER SAFETY-1** and **-2** to provide the final Fire Protection and Prevention Program to staff and to the NCFPD prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer firefighting staff. However, staff has determined that the potential for both work-related and nonwork-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants shows that many of the responses for cardiac emergencies involved nonwork-related incidences, including those involving visitors. The need for prompt response within a few minutes is well documented in the medical literature. Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for the maintenance of on-site cardiac defibrillation devices at many private and public locations (e.g., airports, factories, government buildings). Therefore, staff concludes that, with the advent of modern cost-effective cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site to address cardiac arrhythmias resulting from industrial accidents or other nonwork-related causes.

Staff proposes a Condition of Certification **WORKER SAFETY-5** which would require that a portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use. Furthermore, due to the confusion over what entity will provide EMS and fire response services and the legal basis for providing those services (private service contract or assignment by San Diego County), staff proposes an additional Condition of Certification **WORKER SAFETY-6** which would require the project owner to have in place either a private service contract or the land to be annexed to a fire protection district no later than sixty days before any activity takes place on the site.

CUMULATIVE IMPACTS AND MITIGATION

Staff reviewed the potential for the construction and operation of the OGP combined with existing industrial facilities and expected new facilities to result in impacts on the fire and emergency service capabilities of the NCFPD and the PFD and found that cumulative impacts were insignificant. The NCFPD stated that if the OGP site is annexed to its jurisdiction, the annexation fees, mitigation fees, and property taxes paid by the project would cover the additional costs involved in servicing the OGP site and would ensure that the NCFPD is adequately staffed and equipped to serve as first responder to incidents at the proposed facility. The NCFPD does not expect that the

proposed OGP will have a significant impact on the department due to the safety records and sophisticated fire suppression systems typical of natural-gas fired power plants (TRC2008f, Exhibit 54-1). The PFD stated that they are adequately equipped and staffed to handle incidents at this proposed facility, and that mutual aid agreements with surrounding fire departments would ensure that their district is protected even if all of PFD's resources are dispatched to the OGP site (PFD 2008).

Given the rural area where the project is proposed to be built, the available fire suppression resources, and the lack of unique fire hazards associated with a modern gas-fired power plant, staff finds that this project will not have any significant incremental burden on the department's ability to respond to a fire or medical emergency.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

None received.

CONCLUSIONS

Staff concludes that if the applicant for the proposed OGP provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY -1**, and **-2** and fulfils the requirements of Conditions of Certification **WORKER SAFETY-3** through **-6**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

1. a Construction Personal Protective Equipment Program;
2. a Construction Exposure Monitoring Program;
3. a Construction Injury and Illness Prevention Program;
4. a Construction Emergency Action Plan; and
5. a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable Safety Orders. The Construction Emergency Action Plan and

the Fire Prevention Plan shall be submitted to the North County Fire Protection District for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the North County Fire Protection District stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

1. an Operation Injury and Illness Prevention Plan;
2. an Emergency Action Plan;
3. a Hazardous Materials Management Program;
4. an Operation Fire Prevention Program (8 CCR § 3221); and
5. a Personal Protective Equipment Program (8 CCR §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable Safety Orders. The Operation Fire Prevention Plan, the Hazardous Materials Management Program, and the Emergency Action Plan shall also be submitted to the North County Fire Protection District for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the North County Fire Protection District providing the Fire Department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

1. have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
2. assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

3. assure that all construction and commissioning workers and supervisors receive adequate safety training;
4. complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and
5. assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement (CSS) shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification **WORKER SAFETY-3**, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: Prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in use of the AED and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift

foremen. During operations, all power plant employees shall be trained in use of the AED. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 At least sixty (60) days prior to start of any site activities, the project owner shall provide to the CPM for review and approval either written proof in the form of a legally binding contract with the North County Fire Protection District for private fire response and emergency medical services for the project during construction, commissioning, and operations or written proof that the County of San Diego has designated a fire protection district and that the district will provide the above-mentioned services.

Verification: At least sixty (60) days prior to the start of any site activities, the project owner shall provide proof of fire and EMS services to the CPM for review and approval.

REFERENCES

California Fire Code 1998 – Published by the International Fire Code Institute comprised of the International Conference of Building Officials, the Western Fire Chiefs Association, and the California Building Standards Commission. Whittier, Ca.

NCFPD (North County Fire Protection District) 2008 – Record of conversation with Fire Chief William R. Metcalf, September 29.

OGE 2008a – OGE/S. Thome (tn46770) Application for Certification Orange Grove Energy dated 6/19/08. Submitted to Dockets 6/19/08

TRC 2008f – J. Stenger (tn47854) Data Responses 1-73 dated 8/29/08. Submitted to Dockets 8/29/08

PFD (Pala Fire Department) 2008 – Record of conversation with Fire Chief Anthony Ravago, September 30.

Uniform Fire Code 1997, Vol. 1 – Published by the International Fire Code Institute comprised of the International Conference of Building Officials and the Western Fire Chiefs Association, Whittier, Ca.

U.S. OSHA (United States Occupational Safety and Health Administration). 1993 – Process Safety Management / Process Safety Management Guidelines for Compliance. U.S. Department of Labor, Washington, D.C.